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Conservatism in Accidental Surgery.

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CONSERVATISM IN ACCIDENTAL SURGERY.

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Few cities with the same hospital accommodations as Denver have as large a number of severe accident cases. This probably applies even more to gunshot than to other injuries, but all classes of accidents are common. For no class of cases has modern surgery done more than for accident surgery, and in no department of surgery is it more essential to have as full a knowledge as possible of the process of natural repair in tissues and of the means through which infection takes place. To be able to judge of the probability of infection in any given case, means often to the patient the difference between a few days' indisposition and, perhaps, the loss of his life.

All will admit that unnecessary handling, manipulating and dressing of wounds is most detrimental to their repair. The simple handling of a wound destroys thousands of cells whose vitality may have been deprived, but which have not been necessarily destroyed. And if handling dooms so many, how many more are destroyed by the indiscriminate, wholesale application of poisons to them in the shape of antiseptics? I am not by this assailing the use of antiseptics, far from it; but their abuse. I cannot but consider the application of strong poisons to injured tissue cells, or to rapidly developing embryonic cells, such as we find in granulation tissue, to be about as bad surgically as the neglect of the use of an antiseptic in a wound which is suspected to be infected.

Scientific surgery is the ability to judge just when to use them and how far to go in their use. Beyond question, what is to be desired is nothing more than the complete practical disinfection of the wound; that is, the removal or destruction of such infecting material as may be deposited there and no more. All beyond this is injuring the parts. If there is no infection the use of any disinfectant simply poisons the parts. If we

can remove the infecting material mechanically, as by simple water irrigation, we gain just as much as the life of all the superficial cells is worth for the repair of the wound. If we must use an antiseptic then we should use the one which best destroys the infecting material and does so with the least damage to the living cells.

Simply, the object of the first dressing of the wound is to place it in an absolutely aseptic condition, so that we may then protect it from further infection and allow the natural reparative process to go on undisturbed. If our wound is aseptic and protected from infection we need have no concern for dead

cells, for dying tissue, for detached portions, for blood clots or other dead matter. Indeed a reasonable amount of dead matter acts as a good matrix in which repair will go on. I realize no greater mistake than that sometimes made of trying to remove the dead and dying tissue from an injured part. Dead tissue that is infected must, of course, not be left in a wound unless all infection is destroyed. Parts that are torn and far separated must be brought into reasonable, normal relationship; but even this is more apt in severe injuries to be overdone than left undone. Keep the wound free from infection and the natural process of the tissue cells will work wonders. In the majority of injuries I doubt much if anyone can tell just what cells will live and what die, and so attempts to remove all dead tissue, even if it were desirable, must be futile, and, worse yet, must destroy countless cells that would otherwise live by damaging the much impaired blood vessels supplying the injured parts.

The great question then is the one of first dressing in all injuries, but I can attempt to give no definite rules for the application of this dressing in the limits of a paper read here. The combination of conditions that influence our technique is so varied that the same will hardly occur twice in a lifetime. Some of the conditions that we must always be informed upon before we can rationally decide upon our mode of dressing are: The substance producing the wound, the way the wound was made, the amount of bleeding after it, what has come into contact with the injured parts since the injury, the condition of

the skin before the injury, and the time since its occurrence. The number of conditions that bear upon this point seem endless, yet how we shall treat any one particular wound must be determined by the answers to many such questions. In one wound we would hardly use sterilized water, while in the next it might seem wise to use even a 1-500 bichloride solution. The question always is how little antiseptic and how weak dare I venture in this? And you may rest assured that, other things being equal, the less poison you apply to a wound the better your result will be. Do as little as you can safely to get rid of infection, then guard against it and let the wound alone.

One class of wounds which a general rule seems to reach are bullet wounds. A bullet wound is practically always a non-infected wound, and should, therefore (with too few exceptions to mention) be let absolutely alone. The bullet probe and over enthusiastic wound irrigation and drainage are responsible for much of the mischief laid to the gunpowder. Of course this does not apply to those cases where the indications are positive for operative proceedings, such as to sew up intestines or ligate large vessels. Burns also are, from their nature, always aseptic wounds, and should be so treated; but they are, of course, most liable to early infection. There is no better and more thorough cleanser of a wound than a good free hemorrhage from its deepest parts. All infecting material is mechanically removed and the wound filled and sealed by a mass of dead tissue which can only be infected from its exterior. Pure water can often be made to do the same cleansing service, for when a wound is treated immediately and there is only a suspicion of surface infection it will mechanically remove it with safety and so save us from poisoning our tissues. Many injuries are so extensive as to entail the ultimate destruction of much tissue dependent upon the part injured. The operation for the removal of these parts was formerly considered best done immediately. Not so in modern surgery. We can now generally protect the parts from infection and so the patient from danger, and wait for reaction from the depressing effects of the injury on the constitution of the patient, and for distinct lines to form to guide us in the extent of our operations.

Having freed our wound from infection and protected it with a thorough dressing, what shall we then do? Await developments. No definite, general rules can be laid down for a future course. In some wounds it will be found best to reopen and redress them in a few days; but if no infection has taken place the longer we can leave them the more satisfactory will be the results. It is a definite axiom that no wound can be dressed without some danger and some harm being done to it. We have all learned to strongly condemn meddlesome midwifery, but modern developments teach us that meddlesome surgery is much more common and quite as dangerous to humanity.

I shall now briefly review a few accident cases illustrating these principles as applied to the different classes of cases. First, illustrating the milder class of injuries, I shall speak of three glass cutting wounds, which have recently come into my hands. I do not select for special results, as the results given are the average results obtained in these cases.

S—, a small boy, while playing in an alley on May 14, fell on a piece of glass which made a deep cut down the bone just exterior to the anterior superior spine of the ilium. The wound was about two inches in length. I saw him within an hour and took him to St. Luke's Hospital, where, after a thorough cleansing of the skin, I washed the wound out with a bichloride solution (as infection was almost certain) and then with sterilized water. I stitched it closely with sterilized silk, and applied protective and sterilized dressing. Upon removing these I found union complete and perfect, not even the stitches showing any sign of inflammation.

On June 10, A—, a little girl, slipped on some steps and broke a tumbler under her, cutting the buttock entirely across, the wound beginning about one and one half inches external to the anus, and extending outwards and upwards. The force was exerted upwards so as to cut through the gluteal muscles, almost parallel to the skin, making a wound about four inches deep. This I saw about two hours after its occurrence, when I took her to St. Luke's and dressed it in the same way. I removed the dressing on the 16th, Saturday last, and found union per-

fect and satisfactory, There was, however, more redness about the sutures than in the last case, which was probably due to the impossibility of keeping the parts at rest.

Frank B., a stoker in one of our largest restaurants, fell forward into a pile of broken glass on June 8th. I was called to the hospital to help catch the deep bleeding vessels, but a tourniquet had controlled them before I got there. The wound extended across the inner base of the palm from a little external of the medium line in the thenar eminence inwards around the hand to about the styloid of the ulna. It extended so deeply that the articulation between the carpal bones lay open. It had been washed and handled much and it was difficult to distinguish the various structures. I passed buried sutures to bind the deep parts in their proper positions and then united the skin. The little finger was without sensation for the first few days but soon began to improve. It was dressed yesterday and all found satisfactory. Within a week after this report recovery was complete and perfect.

Now, to state briefly, a few severer cases:

H. was kicked by a horse low in the center of the forehead on Nov. 5th, 1892, and the skin and tissues torn and the bone crushed in. As the symptoms seemed threatening I at once operated. It was not necessary to trephine entirely through the bone as the pieces were easily removed when loosened by the instruments. Quite large pieces of the external plate were removed, and as the internal plate fractures were over the longitudinal sinus and were too low to affect the brain, they were not disturbed. The wound was closed, dressed, etc., as in the above, and the patient left St. Luke's Hospital well on November 18th, having been there thirteen days.

The next case is that of Henry S., aged 18, who on March 28th last fell 25 feet from a building, landing head foremost in a pile of rubbish. The forehead was torn badly, and the frontal bone was extensively crushed in. He was taken to the County Hospital in an unconscious condition. I did not see him for some hours, and then, finding him doing well and that he had been properly cleansed and dressed, I did not uncover

the wound. I did not touch it until all immediate symptoms of the injury had disappeared, which was on the third day. The laceration and displacement of the upper forehead tissues was very great, and the bone extensively depressed. This was all replaced and the skin adjusted. Recovery was complete and satisfactory with the exception of a stitch abscess which kept him in the hospital, as a precaution, for a longer time than usual.

The next case of head injury I show you here. He was crushed by falling from a train thirteen days ago. His case is of both surgical and neurological interest, and I shall, with Dr. Eskridge, report it more fully later. He is here for inspection.

I shall now summarize for you two deep puncture wounds, both patients of the county hospital.

First, that of a young man, Lawrence M., stabbed on March 29th just along the diaphragm of the left side. Had the knife not gone upwards it would have been an abdominal wound. Air pumped in and out with every respiratory movement. It was probed to find the direction of the wound and no more. It was then immediately sealed and recovery was rapid and uncomplicated.

It was not, however, so rapid as in the case of an old man, Slater, over 70, stabbed at the county poor farm, on April 14th with a tobacco knife. The liver was deeply punctured just below the cartilages, about an inch to the right of the median line. Hemorrhage had been very profuse at first. A probe dropped into the wound directly backwards and so I believe it was confined to the liver alone. I filled the external wound down to the liver only with sterilized gauze and dressed it, awaiting developments. The only development was the rapid and uncomplicated recovery of the old man, he feeling quite well again within a week.

I shall now take up the more interesting subject of gunshot wounds.

First, I shall speak of two penetrating wounds of the chest, both attempts at suicide and both attempts to pierce the heart. The first I associate with the second, not in point of time as it occurred several months ago, but on account of its great simi-

larity to the second. This was a young girl, H—— J—— who shot herself in the second interspace about two and one-half inches to the left of the mid-sternal line. It was difficult to realize how the bullet in its direct course backwards passed all structures of vital importance. The house surgeons, not then so familiar with our present technique, placed a drainage tube through the large orifice of entrance, and frothy blood and air pumped in and out with each breath. I removed the tube, cleansed and sealed the wound, and the patient left the hospital in nineteen days quite well. The bullet was cut from under the skin between the scapula and spine, having passed almost horizontally through the left lung.

The second case was in a much older woman, Nora W., who was taken to St. Luke's Hospital during the past year. In this case the bullet also passed through the thorax horizontally, coming completely out behind. The point of entrance was just internal and below the heart apex. The point of exit horizontally parallel to the middle plane of the body directly at the back. It must have torn the diaphragm and it was hard to realize how it got past the heart ventricle. The tissues about both wounds were cleansed and the wounds sealed at once. There were symptoms of pulmonary congestion, but the patient left the hospital well in thirty-three days.

The case of J. B., a deputy sheriff, aged 44 years, was of still greater interest. On the night of January 31st last, he dropped his 44 caliber revolver. Falling on something behind him it went off, the bullet entering the thigh at about the junction of the lower two-fourths of the femur with a downward direction. The bone seemed completely comminuted and the condyles separated, and both quite loose, the bullet apparently passing out between them and on through the joint escaping through the center of the ligamentum patellæ just above its attachment to the tibia. The skin wounds here, together with all the surface about them, were thoroughly cleansed and disinfected; the wounds were sealed and dressed and the leg fixed without extension. The dressings were altered on the seventh day. The leg was subsequently put in plaster and kept absolutely at rest for over three months. In eight days the even-

ing temperature fell to 99, and remained practically normal from that time on.

He left the hospital about a month ago without giving notice to any one, and I have not seen him since. He was then walking on crutches, putting considerable weight on the knee, in which there was very fair, but somewhat limited motion. The leg still swelled a good deal, especially in the knee. I had then every reason to expect even more satisfactory results in the course of time.

L. C., a school teacher, aged 27 years, while on the train coming to Denver from the East on February 9, 1893, attempted suicide by shooting himself in the brain with a small calibre pistol. The wound was on the right side over the upper temple, the course of the bullet being transversely across the brain. He had been dressed on the road, but on arrival at the hospital I disinfected and cleansed the wound and found that the bone was exceedingly comminuted. As he showed some symptoms of shock, but no urgent local symptoms, I dressed the wound and gave him time for recovery. Improvement was so rapid and satisfactory, the temperature falling to normal on the sixth day, that I did not remove the dressings until the eleventh day, when I found the skin completely healed. I, however, incised freely down to the bone, and found that the skull was spiculated to a circle at the point of entrance, the pointed spicules penetrating through the dura into the brain. A large amount of necrosed tissue showed the course of the bullet to have been across the very anterior portion of the frontal lobe; beyond that the bullet was not traced at all, but was allowed to remain at rest, probably within the skull. The irritating points of bone were freely removed and the wound dressed. A small drainage aperture, however, was left until the next dressing, the patient left the hospital apparently in perfect physical and mental health on March 5th.

The next case I shall mention rather as a surgical curiosity than otherwise:

I was called to the County Hospital in April last, to see a man shot through the chest, about the apex of the heart. On examination I found a rather large, lacerated wound directly

over the apex. The heart's action was much disturbed, but the symptoms were hardly serious enough to be in keeping with such a desperate injury. On close examination I found the entrance wound somewhat elongated, extending down to the rib but without any deeper penetration. On asking for the patient's clothes for examination I found that the bullet had passed through a heavy flannel shirt, in which there was a pocket over the left breast, just external to this pocket; but no orifice for the escape of the bullet was visible. However, on handling the shirt further, I shook the bullet from the pocket and then found that in coming outwards its force had only been sufficient to carry it into the pocket without penetrating the outer layer of flannel. The bullet had actually been caught in the pocket of the shirt. I need hardly add that the patient left the hospital in a few days quite recovered.

